Heinrich Hertz: Memoirs, Letters, Diaries. Edited by Johanna Hertz. 2d ed., enl., prepared by Mathilde Hertz and Charles Susskind. English translation by Lisa Brinner, Mathilde Hertz, and Charles Susskind. San Francisco: San Francisco Press, 1977. Pp. xxxvii+361. $19.50.

Were it not for the importance of Hertz's experiments to the early history of radio, some question might be raised as to the appropriateness of reviewing this book in a journal devoted to the history of technology. Technological matters do not figure prominently in Hertz's correspondence or diaries, except in the special sense of the technology of laboratory experimentation. And, as Charles Susskind has reminded us, the application of his discoveries to practical use was not a matter to which Hertz devoted much attention. Nevertheless, as everyone knows, it was out of Hertz's experiments with high-frequency electrical oscillations that the early art of "signalling without wires" developed, and for this reason, if no other, anything that adds to our knowledge of Hertz the scientist adds also to our knowledge of the origins of modern electronic technology.

With the exception of a few to von Helmholtz and a few from his

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wife, the letters printed in this book are letters from Hertz to his parents. The diaries from which excerpts are taken apparently served Hertz purely as memoranda of each day's major activity: The entries are very short—typically one or two sentences—and anyone who looks in them for considered reflections on matters historical or philosophical will be disappointed. And it should be borne in mind, by anyone who seeks in these letters or diary entries insight into the creative process, that they are truly selections. The basis for selection is made clear in the preface to the second edition prepared by Hertz's younger daughter, Mathilde. His parents, she tells us, preserved the letters written to them for many years, reading them again and again. "Whatever might have disturbed the picture of an ideal relationship—expressions of differences, of morbid thoughts and human weaknesses—would have been sorted out and destroyed: that seemed natural, even a duty, to their way of thinking" (p. xi). This may explain why the book contains only three letters written from Karlsruhe in that critical year, 1885—a period when, according to his daughter, Hertz's depression almost reached the stage of mental illness. The decisive steps forward in his creative thinking were taken, as he himself tells us (p. 218), in turmoil, often in frustration, and after months of despair and self-doubt. A record from which references to such human weaknesses have been largely expunged can give us only limited insight into the wellsprings of creativity.

Enough remains, however, to permit some understanding of the man. We all approach Hertz with foreknowledge of what he accomplished. We think of the "finite velocity of propagation" and Maxwell's equations. I found it intriguing to note the very wide range of Hertz's scientific curiosity before the Karlsruhe experiments and to observe how little reference there is to Maxwell until after the work on very rapid oscillations is completed. Hertz's mentor was von Helmholtz, not Maxwell, and his research interests are probably best interpreted in terms of a German, not an Anglo-Scottish, scientific tradition.

This edition prints the German text on the left-hand page, the English on the right. I am unable, unfortunately, to appraise the quality of the translation, but the English text flows very smoothly, with only a few minor rough spots. Only one letter (p. 85) is frankly conceded to be nontranslatable—undoubtedly a wise decision. Charles Susskind has added a number of footnotes which help to explain references which might otherwise be obscure to American readers.

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